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The importance of individual-pair lending relationships

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Abstract

We examine the significance and uniqueness of individual-pair relationships cultivated through repeated loan interactions. Using a hand-collected dataset compiled of borrowing manager and loan officer information, we find that individual-pair relationship loans are associated with a cost-of-debt reduction of between seven to 13 basis points. We also document that the relationship has an economic impact even when other affiliations, for example, institutional pairs, social ties, cultural proximity, and gender, are considered. Individual-pair relationships matter because they furnish lenders with useful soft information, especially when the firm has a poor hard information environment or when the bank and loan officer rely less on hard information. In addition, we find that individual-pair relationship loans have fewer rating downgrades, suggesting that accumulated soft information leads to better loan quality. Collectively, our results highlight the unique value of sustained professional engagement between two individuals in the lending process.

Keywords Individual-pair lending relationships · Asymmetric information · Soft information · Professional connections · Bank lending · Debt contracting

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1 Introduction

Debt contracting theory suggests that relationships provide a meaningful mechanism to overcome information asymmetry. Early studies on relationship lending, which focus on the institutional-pair level (i.e., firms–banks), document mixed empirical evidence on its benefits and costs (Berger and Udell 1995; Boot and Thakor 1994; Bharath et al. 2011; Cole 1998; Petersen and Rajan 1994, 1995; Prilmeier 2017; Rajan 1992; Schenone 2010; Sharpe 1990).[1] These varied findings may result from *and* attest to the fact that the underlying relationships involve individuals rather than just institutions. Acknowledging this issue, more recent research examines the importance of *individuals* in loan transactions (Bushman et al. 2021; Carvalho et al. 2023; Dagostino et al. 2022; Dooley 2022; Drexler and Schoar 2014; Haselmann et al. 2013; Herpfer 2021; Karolyi 2018; Khan et al. 2019). These studies have enhanced the understanding of the human factor's effect on debt contracting by showing how individual-institutional relationships and individuals can influence loan outcomes. Our paper extends this work by focusing solely on individual-pair relationships and, specifically, on the relationships cultivated between the two key individuals directly involved in the loan process: the borrowing manager and the loan officer.

It is unclear whether, holding the institution constant, individual-pair relationships matter for debt contracting. On the one hand, the soft information accumulated and the trust developed through these relationships may inform loan decisions by lowering initiation screening and monitoring costs, resulting in a lower cost of debt.[2] Psychology research also suggests that loan officers may extend greater trust to borrowing managers with whom they have a shared experience (e.g., working on a prior lending agreement). For example, Dutton and Heaphy (2003) argue that repeated interactions at workplaces create valued resources and build important connections that improve the flow and rate of future resource exchange.

On the other hand, individual-pair relationships may not matter in debt contracting or could result in a higher cost of debt. Studies document that large banks

[1] For example, Boot and Thakor (1994) document that borrowers gain an unsecured loan with a below spot market interest rate based on their durable relationship with banks. Berger and Udell (1995) state that, among small firms, borrowers with a bank relationship enjoy lower interest rates and are more likely to be granted collateral waivers. Bharath et al. (2011) show that repeated borrowing from the same lender results in lower loan spreads. Petersen and Rajan (1994) observe that relationships with institutional lenders increase financing availability. Lenders are also more inclined to extend credit to a firm with which they have a pre-existing relationship (Bharath et al. 2007; Cole 1998). Prilmeier (2017) finds that a covenant's strictness is relaxed over the duration of a relationship. Petersen and Rajan (1995) further show that a relationship's value depends on the extent of credit market competition. However, despite the shared benefits of soft information accumulation, other studies cite banks' exploitation of their information advantage through a lock-in effect, e.g., imposing less favorable terms (Rajan 1992) or offering higher interest rates (Sharpe 1990). Schenone (2010) finds that after a borrower's initial public offering (IPO), interest rates decrease significantly.

[2] In accordance with Liberti and Petersen's (2019) conceptualization, soft information can be defined as data that are challenging to summarize solely through numbers. These data require contextual knowledge for comprehension and thus lose their value when decoupled from the environment in which they are collected. In contrast, hard information refers to quantitative data that can be transmitted impersonally whose interpretation are independent of the collection environment.

typically engage in transaction-based lending, rely more heavily on hard (i.e., quantifiable) information than soft information, and maintain impersonal relations with their borrowers (Berger et al. 2005; Bushman et al. 2021). Additionally, because financial technologies that automate decision-making have pushed banks to rely more on quantifiable hard information (Das 2019), individual-pair relationships may no longer be as critical. Furthermore, incumbent lenders possess an information advantage over external lenders and may use their soft information monopoly to extract rents from the borrower (Greenbaum et al. 1989; Schenone 2010; Sharpe 1990). Finally, an individual–pair relationship may lead to suboptimal loan outcomes due to biases, for example, when the loan officer and the borrowing manager are both men (Campbell et al. 2019). Given these factors and competing arguments, it is an open empirical question whether soft information acquired through individual–pair relationships helps reduce information asymmetry and is thus associated with a lower cost of debt after controlling for institutional relationships.

We adopt a rigorous, labor-intensive approach to gauge the impact of the individual-pair lending relationship. Our sample begins with all syndicated loans secured from 1996 to 2016. Next we follow Nini et al. (2009) and collect all disclosures that are likely to be credit agreements and match the contracts to the DealScan database. We then hand-collect both borrowing manager and loan officer information from the signature page of each matched contract. Our focus on these key actors aligns with Bushman et al.'s (2021) and Herpfer's (2021) assertion that contract signatories are typically highly engaged in contracting negotiations and interact extensively throughout the process. We classify the individual pairs as having a relationship if the borrowing manager-loan officer pair has engaged in a loan transaction before the current transaction. This allows us to study direct relationships and overcome the limitations of prior research. It also helps us separate individual-pair lending interactions from institutional-pair and individual-institutional lending interactions. The resulting sample consists of 3,883 loans with 3,496 unique individual borrower-lender pairs.

We begin our analysis by examining the impact of individual-pair lending relationships on loan spread. Our results show that, after controlling for the observable borrower and contract characteristics, an individual-pair lending relationship generates an approximate 13 basis point (bps) reduction in loan spread, equal to a 7% reduction in the cost of debt, compared with the average spread. Given our focus, we investigate whether the *individual-pair relationship* matters or whether it proxies for a higher relationship level (either the institutional-pair relationship or the individual-institutional relationship).

While it would be advantageous to include all levels of relationship lending in one regression, a high correlation between the variables prohibits this approach. Thus we test the effect of individual lending relationships on loan spread by running multiple regressions, where each regression controls for another lending relationship type used in prior research. Our results show that our new relationship measure is significant and economically stronger than other measures. However, when we control for the loan officer-borrowing firm relationship level, we find that both variables are negative but insignificant. This result is likely due to the two variables' high collinearity.

To provide additional insight into whether individual-pair-level relationships have incremental value over other higher-level relationships, we conduct two additional tests. First, we follow Bushman et al. (2021) and Herpfer (2021) and estimate a model of loan spreads on the loan officer-borrowing manager fixed effect. We find that this fixed effect offers explanatory power above and beyond (1) loan officer (Bushman et al. 2021) and (2) loan officer-borrowing firm (Herpfer 2021). Second, we follow Bharath et al. (2007), who measure the benefits of relationship lending by focusing on the probability of a future transaction between the borrowing firm and lending bank. Specifically, we investigate instances where the individual-pair relationship is ruptured by either the lending officer or borrowing manager departing from their respective institution. In doing so, we assume that the exit of either borrowing manager or loan officer could sever the benefits of the individual-pair relationship. We also theorize that the relationship's significance can be gauged by whether the remaining individual continues to transact with the other entity. Following Herpfer (2021), we identify the last loan of the borrowing manager and loan officer from loan agreements and use the year of the last loan to mark their departure from their position.

Using this reduced sample, we test whether institutional relationships persist after an individual with an established relationship exits one of the transacting institutions. We find that, when the borrowing manager and loan officer are no longer employed by their respective institutions, the two firms are less likely to engage in a new loan, as evidenced by a 69.6% reduction in the odds ratio, compared with their retention at their respective companies. Similarly, when the firm no longer employs the borrowing manager but the bank still employs the loan officer, the odds ratio of future loan engagement is reduced by 73.8 percent. Lastly, when the borrowing manager remains but the initial loan officer departs, the odds decrease by 67.4 percent. These results demonstrate that individual relationships matter. Given that the individual pair is the only ruptured relationship across all three scenarios and that the odds ratio decrease is consistently similar, our findings suggest that this relationship drives the reduction of future institutional engagement. While this test does not directly examine the change in loan spread, it highlights the primacy of the individual-pair relationship over the individual-institutional relationship in loan contracting decisions.

To ensure that our results are robust, we conduct a series of additional tests. First, several studies have examined individual-pair-level relationships in different contexts. Specifically, Engelberg et al. (2012) show that shared college affiliation and previous employment in the same industry are both associated with a lower cost of debt. Additionally, Fisman et al. (2017) find that cultural proximity increases credit amount. Lastly, Campbell et al. (2019) report that, when the loan officer and the borrowing manager are both men, loan quality is worse. Our purview is unique; we study professional relationships that result from extended and direct engagement, that is, the cultivation of individual-pair relationships through multiple loan transactions, and examine their impact on debt contracting. When we control for individual-pair alumni affiliation, borrowing manager industry experience, geographic proximity, ethnicity, and gender, we provide robust evidence that individual-pair lending relationships established through repeated loans are economically meaningful. We also confirm that our findings are robust to controlling for whether the borrowing manager holds a chief title or serves as a board member; the inclusion of bank fixed

effects, firm fixed effects, or both; and whether the loan amount is of relative importance. Last, we use a determinant model to rule out the possibility that correlated factors draw the manager-loan officer pair together and thereby explain our results.

Next we turn to research that demonstrates the value of relationship lending in accumulating soft information (Agarwal and Ben-David 2018; Bushman et al. 2021; Campbell et al. 2019; Liberti and Petersen 2019). We find that individual-pair lending relationships and soft information accumulation matter more for borrowing firms with lower analyst coverage (when hard information is less available) and firms with lower accounting quality (when hard information is less reliable) (Liberti and Petersen 2019). To further corroborate the soft information mechanism, we explore cross-section variation in banks' and loan officers' reliance on soft information. Using proxies to capture lender prominence, we confirm that individual-pair lending relationships bear more significance for lower-volume banks and loan officers than they do for larger ones that rely more on hard information and transaction-based lending (Agarwal and Ben-David 2018; Berger et al. 2005; Bushman et al. 2021).

In our final analysis, we examine future borrower downgrades to distinguish between two potential mechanisms that could explain our findings. First, lending relationships may lead to lower loan spreads because loan officers learn more, which fosters better screening and monitoring. In this case, we expect relationships to decrease the probability of a future downgrade. Alternatively, lending relationships may reflect cronyism, whereby loan officers confer unwarranted advantages to borrowing managers, resulting in worse loans with lower interest rates and deteriorated loan quality. We find that individual-pair relationship loans are less likely to be downgraded than those where such a relationship is absent. Thus our results suggest that individual-pair lending relationships build over time through extended interaction and that they enhance a loan officer's ability to screen and monitor a loan.

Our study makes several contributions. Most importantly, we are the first researchers to examine individual-pair lending relationships that stem from mutual engagement in the contracting process, where most of the soft information about the borrower is gathered (Campbell et al. 2019). Research has primarily explored institutional-pair relationships (e.g., Berger and Udell 1995; Bharath et al. 2011; Petersen and Rajan 1994; Schenone 2010). More recent studies focus on the importance of the human factor. Khan et al. (2019) and Karolyi (2018) report that, when a borrowing firm's executive departs (e.g., a CEO or CFO), the firm loses its prior lender relationships and contracts with new lenders, especially ones that share a relational bond with the incoming executive. In our sample, 62% of the borrowing managers who sign the loan agreement do not serve as CEOs or CFOs. This is important, as studies focusing on borrowing firms' executives and lending banks do not necessarily investigate the person directly handling the loan. Bushman et al. (2021), Herpfer (2021), and Dooley (2022) show that loan officers can mitigate information asymmetry. By comparing the benefits of individual-pair lending relationships at the borrowing manager-loan officer level to those at the individual-institutional level, we demonstrate that individual-pair lending relationships are economically meaningful *and* more impactful than individual-institutional pair relationships.

Second, the emerging literature on personal relationships based on social ties and prior affinity has shown positive effects on debt contracting (Engelberg et al.

2012; Fisman et al. 2017; Haselmann et al. 2013). Our contribution is distinct from this line of research in three ways: (1) the relational pair we examine is not bound by past affiliations, that is, the relationship is built entirely through professional interaction, not external ties; (2) the relationship's impact on contracting outcomes is examined over the course of multiple loans; and (3) unlike the literature that uses common ties as a lens and concentrates on top executives, we identify and track relationships between individuals directly involved in the loan. These differences are significant because they yield new insights into the divergent effects of personal lending relationships and social bonds. Our analyses show that individual relationships built and sustained across firms are economically meaningful.

Third, we contribute to the stream of management literature that examines the cost of non-executive employee turnover (Allen et al. 2010; Hancock et al. 2013; O'Connell and Kung 2007; Tziner and Birati 1996). Most studies consider only the employer's subsequent replacement costs, for example, recruitment and training. Our results suggest that the private information shared and the quality of the relationship maintained between individuals does not easily transfer to other parties. Specifically, the individual-pair lending relationship does not shift readily from the individual to the institution. Thus employee turnover may impose more substantive effects than replacement-related expenses. In our setting, a firm may also incur increased borrowing costs on subsequent loans due to the rupture of the individual-pair relationship.

Fourth, although our study focuses on the syndicated loan market, which typically deals with large loans (an average of $570 million in our sample), our results highlight the crucial role that soft information plays in lending decisions overall and its significance for small businesses that often face worse information asymmetry and limited access to capital (Berger and Udell 1995; Petersen and Rajan 1994). In addition, while the rise of financial technology has facilitated direct connections between lenders and borrowers that bypass traditional intermediaries, it has not effectively communicated soft information, thereby reinforcing the importance of individual relationships. Finally, our study highlights the potential loss of critical information in a disintermediated financial landscape, with far-reaching implications for industries that rely on soft information and cultivation of individual relationships, such as auditing, consulting, real estate, venture capital, and private equity. These implications have significant consequences for the future of the banking industry and suggest that further research on the impact of individual relationships in other environments would be beneficial.

2 Hypothesis development

Lending strategies are often categorized as either transactional or relationship-based. The former type refers to when lenders engage in numerous transactions with many different borrowers, with little emphasis on building long-term relationships. In this approach, lenders do not anticipate repeated interactions with the borrower and seek to break even or make a profit on individual loans (Berger and Udell 2006; Boot 2000). Conversely, relationship-based lending prioritizes establishing

and maintaining long-term relationships with a single borrower, which requires the lender to gather information that can be used in future contracts. In these dealings, lenders anticipate repeated transactions with the borrower and prioritize less quantifiable criteria like trust and reputation. While most banks operate somewhere in between these extremes, it is important to consider their placement on the spectrum in discrete lending scenarios. Banks that pursue more transactional lending rely heavily on hard information, whereas relationship-based lenders prioritize soft factors in their decision-making, since they value building and maintaining long-term borrower relationships. Recent developments in the loan securitization and CDS markets have pushed many lenders toward a transaction-based approach because their uptake of these financial instruments reduces monitoring incentives (Amiram et al. 2017; Kang et al. 2021). In contrast, banks that favor relationship-based lending foster long-term relationships by cumulatively collecting soft information that is not easily observable, verifiable, or transmittable to others (Berger and Udell 2002; Liberti and Petersen 2019). In this sense, a loan officer's cultivation of trust through extended engagement with a borrowing manager is unlikely to transfer over to the institutional relationship. It is maintained solely between individuals, which means that if the relationship ruptures, the trust will also be broken.[3]

Whereas most studies on relationship-based lending focus either on institutional-pair relationships (i.e., borrowing firm-bank) or individual-institutional relationships (Berger and Udell 1995; Bharath et al. 2011; Boot and Thakor 1994; Bushman et al. 2021; Herpfer 2021; Karolyi 2018; Khan et al. 2019; Petersen and Rajan 1994, 1995; Prilmeier 2017; Rajan 1992; Sharpe 1990), there is no evidence on the importance of individual-pair relationships in collecting soft information. We examine whether relationships cultivated between the two key individuals directly involved in the loan, the borrowing manager and the loan officer, have some incremental effect on debt contracting beyond the scope of their respective institutions.

There are two types of individual-institutional relationships. The first involves borrowing firms' executives and lending banks. This relationship is studied by Khan et al. (2019) and Karolyi (2018), who show that an executive's prior affiliations with financial institutions can influence debt contracting. The second relationship is between the loan officer and the borrowing firm. In this setting, Drexler and Schoar (2014) and Herpfer (2021) show that loan officers and their relationships with borrowing firms significantly influence debt contracting. While these studies identify the impact of one individual, that is, the borrowing executive or the loan officer, on contracting outcomes, they ignore the *relationship* built between the two individuals directly involved in the transaction, that is, the borrowing manager and the loan officer. Examining these individuals is important because their interactions form the basis for most soft, non-transferable information about the borrower (Campbell et al. 2019).

Individual-pair lending relationships may provide richer soft information about the borrower (e.g., observed payment behavior, technical covenant violations on

[3] Both soft and hard information are valuable in lending decisions. Soft information can complement hard information by adding context and predicting future performance and can serve as a substitute when hard information is scant. Our study does not take a stance on whether soft information obtained from individual-pair relationships complements or substitutes for hard information.

prior deals, and other corporate account details.), which could facilitate lending relationships between the borrowing firm and lending bank. The information emerges from extensive interactions between the borrowing manager and loan officer prior to loan initiation (Bushman et al. 2017; Murfin 2012) and the many hours thereafter devoted to covenant compliance and monitoring of loan performance (Herpfer 2021). The accumulated soft information and the trust engendered via individual-pair relationships may aid subsequent loan decisions by lowering screening and monitoring costs and resulting in a lower cost of debt.

Following recent studies examining the human factor's effect on spread, we focus on the cost of debt (i.e., loan spreads). Dagostino et al. (2022) and Carvalho et al. (2023) provide evidence of loan officers' time-varying effects on loan spread. Specifically, Dagostino et al. (2022) show that loan officers' partisan perceptions influence loan spread. Carvalho et al. (2023) find that local housing price growth experiences of sophisticated lenders systematically shape credit spreads for borrowers who own real estate assets and riskier loans. In addition, Engelberg et al. (2012) find a reduction in loan spreads when banks' and firms' managements attended the same college or previously worked together. This is because interest rates are an important way banks protect themselves from ex ante poor loan quality (i.e., adverse selection risk) and ex post moral hazard risk from management, which is also why most institutional relationship literature focuses on spreads (e.g., Berger and Udell 1995; Bharath et al. 2011).

Notwithstanding the potential benefits of individual-pair-level relationships, it is unclear whether, holding the institution constant, individual-pair relationships matter for the cost of debt or increase it. There are three possible reasons for this indeterminacy. First, Bushman et al. (2021) argue that big banks rely heavily on hard information when issuing loans to large, transparent borrowers because hard information is more standardized and has economies of scale, which translates to savings in the production process (Liberti and Petersen 2019). Similarly, Berger et al. (2005) document that large banks' interaction with borrowers is more impersonal. Second, soft information acquired through individual-pair relationships may not be relevant to the recent trend in financial disintermediation, in which financial technology is used to automate decision-making (Das 2019). Third, while individual relationships may confer benefits to the lender, they could also create problems. For example, incumbent lenders have an information advantage over outside lenders and may use this advantage to extract rents from the borrower (Greenbaum et al. 1989; Schenone 2010; Sharpe 1990). Thus it is an open empirical question whether soft information generated by individual-pair relationships helps reduce information asymmetry and is thus associated with a lower cost of debt after controlling for institutional-type relationships. Based on the above, we offer the following hypothesis (stated in the positive):

- *H1: Individual-pair lending relationships between borrowing manager and loan officer have an incremental effect on the cost of debt beyond other lending relationships.*

Research documents the heightened value of relationship lending in soft information accumulation (Bushman et al. 2021; Campbell et al. 2019; Liberti and Petersen 2019) and suggests that individual-pair relationships are more meaningful for firms

with poor hard information environments. However, due to their competitive market position and lending volume (Presbitero and Zazzaro 2011), when large banks perform more deals in the syndicated loan market, they are apt to take a transactional approach and rely more heavily on hard information (Berger et al. 2005; Bushman et al. 2021). These lenders may thus value the relationship-based loan *less* than smaller institutions. Therefore we expect to find a lower cost of debt in settings where firms' hard information is less available or trustworthy or when banks and loan officers rely more on soft information.[4] As such, our next hypothesis is (stated in the positive):

- *H1a: Individual-pair lending relationships between borrowing manager and loan officer have a stronger incremental effect on the cost of debt when reliance on soft information is more important.*

Last, we aim to investigate why loan officers with soft information may be willing to offer lower loan spreads to borrowers with whom they've developed personal relationships. We propose two potential explanations, both of which relate to the role of soft information in lending decisions. First, soft information may help loan officers to better screen borrowers during the initial contracting phase (i.e., the screening mechanism), which allows the lender to write more accurate or complete contracts. Additionally, soft information may induce loan officers to learn more about the borrower and better monitor them (i.e., the monitoring mechanism). In both cases, we expect relationships between loan officers and borrowers to be associated with better loan quality. Second, if the loan officer is captured by the borrower, the officer may ignore signals indicating that the borrower is of low quality and issue a loan, resulting in suboptimal lending with lower interest rates and deteriorated loan quality. In this case, lending relationships may induce cronyism, whereby loan officers confer unwarranted benefits on borrowing managers (i.e., the cronyism mechanism). For example, lending decisions based on soft information may result in poorer loan quality due to biases, such as when both the loan officer and the borrower are men (Campbell et al. 2019).[5] To distinguish between these two alternative mechanisms, we study the effect of individual-pair relationships on loan quality. Our last hypothesis is (stated in the positive):

- *H1b: Individual-pair lending relationships between borrowing manager and loan officer cultivate heightened screening and monitoring ability that is associated with higher loan quality.*

[4] While we focus on the informational channel as the primary driver of changes in future interactions between borrower and lender (Berger and Udell 1995), we cannot rule out other types of transaction costs associated with switching (i.e., fee and reduced initial rates with increasing rates over time to entice the borrower (Hernandez-Canovas and Martinez-Solano 2010; Ioannidou and Ongena 2010) because these costs may also explain part of the observed effect. However, it is unclear whether switching costs unassociated with information loss would vary by the exit of either borrowing manager or loan officer.

[5] It is an open empirical question whether soft information gathered at the individual level through repeated interactions will affect loan outcomes. Campbell et al. (2019) show that agency problems increase when the borrowing individual and loan officer share similar characteristics (e.g., gender). However, their study does not observe repeated interactions, and therefore it is unclear whether soft information gained in our setting will exacerbate or alleviate agency problems.

3 Sample construction and descriptive statistics

Our syndicated loan sample spans from 1996 to 2016. We begin in 1996 because electronic filings were only sparsely available on EDGAR before that. We end in 2016 because that is when the DealScan-Compustat Linking Database from Chava and Roberts (2008) concluded its updated comprehensive coverage.

Following Nini et al. (2009), we use text-search programs to scan EDGAR's filings (8-K, 10-K, 10-Q, etc.) for loan contracts. We search for the following 10 terms: "credit agreement," "loan agreement," "credit facility," "loan and security agreement," "loan & security agreement," "revolving credit," "financing and security agreement," "financing & security agreement," "credit and guarantee agreement," and "credit & guarantee agreement."

Second, to merge with syndicated loans in DealScan, we use the firm's tax identification number (CIK) in EDGAR to match with their identifier in Compustat (GVKEY). We then use the GVKEY and the loan date to match each credit agreement with syndicated loans in DealScan using the DealScan-Compustat Linking Database. After manually checking the matching procedure's robustness by borrower name and lender name, we obtain 8,109 credit agreements on EDGAR matched to DealScan loans from 1996 to 2016. Nini et al. (2009) have 3,720 matches from 1996 to 2005; our procedure yields a similar matching rate.

Third, we collect the names of the borrowing managers and the loan officers at lead banks from the signature pages attached at the end of the loan agreements.[6] We retain all documents that contain at least one instance of the string "/s/," which indicates the presence of an electronic signature. For each occurrence, we extract the signer's name, institutional employer, and title. Given the heterogeneity of loan contract forms, we manually verify every signature to ensure accuracy. Our final sample consists of 5,361 credit agreements with signature information from both the borrower and the lender. We lose 2,748 credit agreements that do not contain signatures in the original documents, which may occur because the contract does not include a signature page or the signature page contains only the names of banking institutions, not loan officers. We then drop the observations with missing control variables from CRSP and Compustat and retain only nonfinancial firms, resulting in 3,883 loans for our main analysis (Table 1 Panel A). Our sample size is comparable to other studies that only collect the signature data on the loan officer side (Bushman et al. 2021; Herpfer 2021).

Among the 3,883 loans, there are 2,798 unique borrowing managers, 2,128 unique loan officers, and 3,496 unique borrowing manager-loan officer pairs (Table 1 Panel B). Of those 3,496 entities, 3,124 pairs transacted only once, 310 transacted twice, 53 transacted three times, and nine transacted at least four times (Table 1 Panel C). Table 2 presents the summary statistics for our sample of 3,883 loans with 3,496

[6] As a placebo test, we collect the names of participant banks' loan officers and assess the effect of the individual relationship between borrowing managers and loan officers on loan spread at the participant bank level (Column 1 of Internet Appendix Table IA1). We find insignificant results, consistent with the notion that participant banks do not directly engage in due diligence and monitoring.

Table 1 Sample construction

Panel A: Sample construction

	Number of Observations
Loans from EDGAR matched with DealScan	8,109
Loans with a signature page	5,361
Loans with nonmissing control variables from CRSP and Compustat	4,296
Loans from nonfinancial firms	3,883

Panel B: Number of matched borrowing managers and loan officers

	Number
Unique borrowing managers	2,798
Unique loan officers	2,128
Unique borrowing manager-loan officer pairs	3,496

Panel C: Number of loans among unique borrowing manager and loan officer pairs

	Frequency
One	3,124
Two	310
Three	53
Four and higher	9
Total	3,496

Panel A provides details on our sample's construction of credit agreements with information about the borrowing manager and loan officer between the years 1996–2016. Panel B shows the number of borrowing managers, loan officers, and pairs in our sample. Panel C shows the number of loans among unique borrowing manager and loan officer pairs

borrowing manager-loan officer pairs.[7] Our individual-pair relationship lending measure is an indicator variable equal to one if a borrowing manager-loan officer pair have previously engaged in a loan transaction and zero if it is their first interaction. As shown in the table, the variable's mean value is 0.11, indicating that about 11% of the transactions involve a borrowing manager and loan officer who have transacted on a previous loan.[8] As expected, the mean value of the institutional-pair relationship lending measure is significantly higher, at 0.4, showing that 40% of a borrowing firm's loans are secured from a lending bank with which they have previously transacted. Like Herpfer (2021), who employed DealScan and the loan signature page to conduct his study, we find that the average loan is priced at 180 bps above LIBOR and matures in just over four years. In Internet Appendix Table IA2, we document

[7] While the total number of loan interactions amongst our 3,496 borrowing manager-loan officer pairs should have been 3,942 loans, we lose 59 loan interactions due to missing control variables, yielding a final sample of 3,883 loan interactions.

[8] Given the various restrictions of our sample construction (e.g., absence of signatures), repeated relationships in the full sample of loans are likely much more prevalent than the data suggest. As such, our statistics in Table 1 Panel C likely represent a lower bound estimate on the prevalence of these relationships.

Table 2 Summary statistics

	N	Mean	Sd	P10	P25	P50	P75	P90
Panel A: Lending relationship measures								
Individual-Pair Relationship Lending	3,883	0.11	0.31	0	0	0	0	1
Institutional-Pair Relationship Lending	3,883	0.40	0.49	0	0	0	1	1
CEO-Bank Relationship Lending	2,547	0.24	0.43	0	0	0	0	1
Borrowing Manager-Bank Relationship Lending	3,883	0.19	0.39	0	0	0	0	1
Loan Officer-Borrowing Firm Relationship Lending	3,883	0.14	0.35	0	0	0	0	1
Panel B: Major loan and firm characteristics								
Loan Spread	3,883	179.55	120.56	50	100	150	250	325
Maturity (in months)	3,883	49.13	19.29	12	36	60	60	61
Loan Size (in millions)	3,883	569.51	1,443.86	35	100	250	600	1,250
Collateral	3,883	0.51	0.50	0	0	1	1	1
Term Loan	3,883	0.20	0.40	0	0	0	0	1
Firm Size (in millions)	3,883	5,277	17,320	131	393	1,233	4,050	12,050
Leverage	3,883	0.23	0.18	0	0.09	0.22	0.35	0.47
Profitability	3,883	0.15	0.10	0.06	0.1	0.14	0.19	0.25
Tangibility	3,883	0.33	0.26	0.06	0.12	0.26	0.52	0.75
MTB	3,883	3.13	4.91	0.84	1.29	2.09	3.31	5.36
Interest Coverage	3,883	39.55	564.42	0	1.75	4.41	11.62	33.99
Current Ratio	3,883	1.99	1.74	0.78	1.14	1.68	2.43	3.45
Non-Investment Grade	3,883	0.79	0.41	0	1	1	1	1

Table 2 (continued)

	N	Mean	Sd	P10	P25	P50	P75	P90
Panel C: Other variables								
Same College	748	0.04	0.19	0	0	0	0	0
Borrowing Manager Worked in Financial Industry	2,027	0.11	0.31	0	0	0	0	1
LnGeoDistance	3,320	6.38	1.24	4.88	5.87	6.59	7.26	7.69
SameRace	3,883	0.01	0.08	0	0	0	0	0
SameGender	3,135	0.71	0.46	0	0	1	1	1
ChiefTitle	2,014	0.55	0.50	0	0	1	1	1
BoardMember	3,468	0.57	0.50	0	0	1	1	1
LoanImportance	3,883	0.49	0.29	0.14	0.27	0.44	0.65	1
Analyst Following	3,883	8.79	7.76	0	3	7	13	20
Accounting Quality	3,804	0.40	0.63	-0.18	0.32	0.58	0.72	0.79
Non_Top10 Bank	3,674	0.33	0.47	0	0	0	1	1
Non_Top10 Loan Officer	3,883	0.91	0.29	1	1	1	1	1
Downgrade	3,883	0.20	0.40	0	0	0	0	1

This table provides descriptive statistics for key variables in our sample between the years 1996–2016. Panel A reports the summary statistics for the relationship lending measures. Panel B reports the summary statistics of major loan and firm characteristics. Panel C reports the summary statistics of other variables used in our analyses. All variables are defined in Appendix A

that our sample statistics are representative of the general DealScan universe and comparable to the samples employed by Herpfer (2021) and Bushman et al. (2021).

4 Results

4.1 Individual-pair lending relationship and loan spread

To test our first hypothesis (*H1*), we start by examining the impact of individual-pair lending relationships on loan spreads by estimating the following regression:

$$\begin{aligned} Loan\ Spread_{i,j,k} = {} & Individual-Pair\ Relationship\ Lending_{i,j,k} + Loan\ Level\ Controls_{i,j,k} \\ & + Firm\ Level\ Controls_{i,k} + Year\ FE + Industry\ FE + Purpose\ FE_{k}, \end{aligned} \tag{1}$$

where *Loan Spread* is the all-in-drawn loan spread over LIBOR that loan officer *j* offers to borrowing manager *i*'s firm for loan *k*. Since individual-pair and institutional-pair relationship lending happen at the loan deal level, we retain the loan facility with the largest loan amount to represent the loan deal. *Individual-Pair Relationship Lending* is an indicator variable equal to one if borrowing manager *i* of loan *k* has previously engaged in a loan transaction with loan officer *j* and zero if it is their first interaction. Of the 3,883 loan transactions in our sample, there are 3,496 unique individual borrowing manager-loan officer pairs (see Table 1).

For loan contract *k,* we also include a set of loan-level control variables used in prior studies (Bharath et al. 2011; Herpfer 2021). First, we include *Maturity*, which is the natural logarithm of loan maturity (in months). The mean number of months until a loan in our sample matures is 49 (slightly over four years). Second, we include *Loan Size* as the natural logarithm of the loan amount. We use the largest facility amount per loan, with an average loan size of $569 million. Third, we employ *Collateral* as an indicator variable equal to one if the loan has collateral and zero otherwise. About 51% of the loans have collateral. Fourth, we include *Term Loan* as an indicator variable equal to one if the loan type is a term loan and zero otherwise. Twenty percent of the loans are term loans. We also include common firm-level controls using the most recent performance measures of borrowing manager *i*'s firm at the time of loan *k*. These include *Firm Size*, *Leverage*, *Profitability*, *Tangibility*, *MTB*, *Interest Coverage*, *Current Ratio*, and *Non-Investment Grade.* All our regressions include year, industry, and loan purpose fixed effects and cluster standard errors at the firm level. We provide detailed definitions of all variables in Appendix A.

Table 3 Panel A reports the results of estimating regression (1) using different specifications. Column (1) displays the results from regression (1) using only our main variable of interest and shows that the coefficient on *Individual-Pair Relationship Lending* is significantly negative. As expected, the loan spread is significantly lower when the loan officer-borrowing manager pair have previously engaged in a loan transaction. Specifically, the magnitude of the coefficient, -12.635, translates to a 12.635 bps lower loan spread in the presence of a prior working relationship. To help contextualize the effect of the individual-pair relationship, one standard

Table 3 The impact of individual-pair relationship lending on loan spread

Panel A: The impact of individual-pair relationship lending compared with higher-level relationships

	(1)	(2)	(3)	(4)	(5)
	Loan Spread	*Loan Spread*	*Loan Spread*	*Loan Spread*	*Loan Spread*
Individual-Pair Relationship Lending	-12.635*** (-3.31)	-11.719*** (-3.10)	-6.895* (-1.73)	-10.667** (-2.28)	-6.546 (-0.93)
Institutional-Pair Relationship Lending		-5.195* (-1.94)			
CEO-Bank Relationship Lending			-5.009* (-1.71)		
Borrowing Manager-Bank Relationship Lending				-2.513 (-0.62)	
Loan Officer-Borrowing Firm Relationship Lending					-6.595 (-1.01)
Maturity	-17.659*** (-4.54)	-17.709*** (-4.55)	-12.321*** (-2.95)	-17.623*** (-4.53)	-17.682*** (-4.55)
Loan Size	-9.109*** (-3.58)	-8.933*** (-3.50)	-4.949* (-1.79)	-9.107*** (-3.58)	-9.071*** (-3.56)
Collateral	52.612*** (15.25)	52.650*** (15.28)	44.578*** (10.92)	52.576*** (15.23)	52.590*** (15.25)
Term Loan	72.269*** (12.28)	71.974*** (12.24)	62.019*** (9.35)	72.205*** (12.25)	72.192*** (12.28)
Firm Size	-8.962*** (-3.92)	-8.882*** (-3.89)	-4.797** (-1.98)	-8.919*** (-3.89)	-8.943*** (-3.91)
Leverage	82.346*** (6.84)	83.764*** (6.95)	107.019*** (7.68)	82.340*** (6.84)	82.477*** (6.86)
Profitability	-245.821*** (-9.89)	-244.625*** (-9.84)	-195.549*** (-7.59)	-245.847*** (-9.89)	-245.556*** (-9.87)
Tangibility	-5.781 (-0.51)	-5.645 (-0.49)	-19.869* (-1.93)	-5.804 (-0.51)	-5.854 (-0.51)
MTB	0.582 (1.33)	0.575 (1.32)	0.500 (0.88)	0.582 (1.33)	0.577 (1.32)
Interest Coverage	0.001 (0.63)	0.001 (0.56)	0.001 (0.93)	0.001 (0.62)	0.001 (0.63)
Current Ratio	-3.206** (-2.45)	-3.276** (-2.48)	-3.729** (-2.08)	-3.213** (-2.45)	-3.214** (-2.45)
Non-Investment Grade	40.381*** (9.30)	40.227*** (9.30)	47.329*** (10.76)	40.386*** (9.30)	40.469*** (9.30)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Purpose FE	Yes	Yes	Yes	Yes	Yes
Variance Inflation Factor	1.05	1.07	1.23	1.76	3.24
Adj. R-squared	0.524	0.523	0.549	0.523	0.524
Observations	3,883	3,883	2,547	3,883	3,883

Table 3 (continued)

Panel B: The explanatory power of individual pair fixed effect

	Specification A	Specification B	Specification C	Specification D	Specification E
Controls	Yes	Yes	Yes	Yes	Yes
Bank FE		Yes	Yes	Yes	Yes
Loan Officer FE			Yes		
Loan Officer-Borrowing Firm FE				Yes	
Borrowing Manager-Loan Officer FE					Yes
Adj. R-squared	40.5%	46.1%	54.0%	59.4%	62.2%
Incremental R-squared		5.6%	7.9%	5.4%	2.8%

This table reports the impact of individual-pair relationship lending relative to other relationship levels

Panel A shows the relative effects of *Individual-Pair Relationship Lending* and higher-level relationships on *Loan Spread.* Our dependent variable, *Loan Spread,* is the all-in-drawn loan spread over LIBOR. *Individual-Pair Relationship Lending* is an indicator variable equal to one if a borrowing manager-loan officer pair has engaged in a loan transaction before the current transaction and zero otherwise. *Institutional-Pair Relationship Lending* is an indicator variable equal to one if a borrowing firm-lending bank pair has engaged in a loan transaction within five years of the current transaction and zero otherwise. *CEO-Bank Relationship Lending* is an indicator variable equal to one if the firm CEO-lending bank pair has engaged in a loan transaction before the current transaction and zero otherwise. *Borrowing Manager-Bank Relationship Lending* is an indicator variable equal to one if the borrowing manager-lending bank pair has engaged in a loan transaction prior to the current transaction and zero otherwise. *Loan Officer-Borrowing Firm Relationship Lending* is an indicator variable equal to one if the loan officer-borrowing firm pair has engaged in a loan transaction before the current transaction and zero otherwise. All other variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

Panel B shows results of OLS regressions of loan spreads on control variables and fixed effects. Specification A only includes control variables, and Specification B further includes bank fixed effect. After including control variables and bank fixed effect, Specifications C, D, and E further include loan-officer fixed effect, loan officer-borrowing firm fixed effect, and borrowing manager-loan officer fixed effect, respectively. All specifications use the same control variables as Table 3 Panel A. The highlighted row shows the incremental R-squared, compared with the previous specification

deviation in profitability (leverage) is associated with a 24.6 (15) bps lower (higher) loan spread. Similarly, a non-investment-grade (term loan) designation results in a 40 (72) bps higher loan spread. These results reflect the economic significance of the individual-pair relationship. While not as large as the hard information captured in observable fundamentals, the effect is meaningful because it reflects the soft information gathered by the negotiating parties. Moreover, Bharath et al.'s (2011) documentation of a lower cost of debt of 10–17 bps for institutional-pair relationship

loans is comparable to the impact of individual-pair relationships on the cost of debt in our study.[9]

To compare the incremental effect of individual-pair relationships with that of other relationships, we run separate regressions of *Individual-Pair Relationship Lending* on loan spread by adding *Institutional-Pair Relationship Lending*, *CEO-Bank Relationship Lending*, *Borrowing Manager-Bank Relationship Lending*, and *Loan Officer-Borrowing Firm Relationship Lending* as additional control variables. Due to the high correlation among the variables, as consistent with the endogenous nature of relationships (Bharath et al. 2011), we cannot include all levels of relationship lending in one regression.[10]

The results of our comparative tests are reported in Columns (2) through (5) of Panel A.[11] The coefficients on *Individual-Pair Relationship Lending* are significantly negative in Columns (2) through (4), suggesting that this relationship provides incremental explanatory power for loan spread over *each* of the other variables. In addition, the magnitude and significance of these coefficients are larger than the other relationship-level control variables. This yields further evidence that the individual-pair relationship provides the basis for most soft information accumulation. However, when we include the *Loan Officer-Borrowing Firm Relationship Lending* indicator variable, its coefficient and the *Individual-Pair Relationship Lending* indicator variable both remain negative but become insignificant (Column 5). Accordingly, we cannot conclude that individual-pair relationships have a significant incremental effect on loan spreads over loan officer-borrowing firm relationships. We posit that the insignificant coefficients shown in Column (5) may be due to insufficient differences between the variables. In support of this conjecture, only 95 borrowing managers still signed loan contracts after moving to another company, representing only 3.4% of the total number of unique borrowing managers. Moreover, we find that the two variables are highly correlated (0.8266), which contributes to an increase in the variance inflation factors (3.24, as compared with 1.07 to 1.76 in the other specifications).[12, 13]

[9] Our results are qualitatively unchanged if we relabel the individual-pair relationship as zero for 14 cases (3.3% of the individual-pair loan transactions) where there hasn't been a loan between the borrower and lender in the past five years (Columns 2 through 6 of Internet Appendix Table IA1).

[10] For example, the correlations between *Individual-Pair Relationship Lending* and *Institutional-Pair Relationship Lending*, *CEO-Bank Relationship Lending*, *Borrowing Manager-Bank Relationship Lending*, and *Loan Officer-Borrowing Firm Relationship Lending* are 0.1470, 0.3974, 0.6465, and 0.8266, respectively.

[11] In Internet Appendix Table IA3, our results remain similar when we log adjust the loan spread variable, except for Column 3, where it becomes insignificant. One limitation of log adjusting loan spreads is that we lose the information content of the distribution's right tail and place more weight on the left tail. This is especially problematic when the loan officer has more room to downwardly adjust the loan spread on the right tail.

[12] In Internet Appendix Table IA4, we examine the effect of individual-pair relationships on other contracting terms (upfront fee, loan amount, collateral, maturity, covenants, lead arranger share, etc.) to see whether there is a substitution effect. The results of this analysis do not provide any evidence that the reduced spread from individual-pair relationships results in an increase in monitoring provisions. In contrast, the institutional relationships do show evidence of a substitution, further suggesting that individual-pair and institutional relationships are very different relationship types.

[13] As Mansfield and Helms (1982) noted, if variance inflation factors is significantly larger than one, then multicollinearity is a problem.

To further explore whether individual-pair-level relationships have incremental value over other higher-level relationships, we conduct two additional tests. First, we follow Herpfer (2021) and Bushman et al. (2021) and estimate a model of loan spreads on the loan officer-borrowing manager fixed effect to examine whether it offers explanatory power above and beyond (1) loan officer (Bushman et al. 2021) and (2) loan officer-borrowing firm (Herpfer 2021) fixed effects. We report the results of this analysis in Panel B of Table 3. Specification E indicates that loan officer-borrowing manager fixed effects increase the explanatory power of the loan spread by 8.2% (62.2%–54.0%) over loan officer (Specification C) and 2.8% (62.2%–59.4%) over loan officer-borrowing firm (Specification D).[14]

4.2 The effect of relationship rupture on subsequent loans and loan spread

Next we follow Bharath et al. (2007), who measure relationship lending's benefits by focusing on the probability of future interaction between borrowing firm and lending bank. Specifically, we investigate instances where institutional relationships persist, but the individual-pair relationship has been broken by an individual's departure from that person's respective institution. Holding institutional relationships constant effectively controls for bank and firm fixed effects; focusing on the same bank-firm pair gauges the relationship's endurance and impact as evidenced by subsequent institutional engagement.[15] To isolate the significance of the individual-pair relationship, we take a deductive approach by removing various relationships from the sample and observing the change in probability of future transactions.

Given the difficulty of isolating the individual pair, we evaluate other relationships to infer its effect. As shown in Fig. 1, (A) represents the institutional-pair relationship, (B) represents one type of individual-institutional relationship (i.e., borrowing manager-lending bank), (C) represents the other type of individual-institutional relationship (i.e., loan officer-borrowing firm), and (D) represents the individual-pair relationship.

We begin by examining instances where both the borrowing manager and loan officer leave their respective firms. This means that relationships (B), (C), and (D) all rupture, and only the institutional-pair relationship (A) remains. We then estimate the probability of future loan contracting between the borrowing firm and lending bank. Next we rerun the analysis by focusing on instances where the borrowing manager leaves the firm, severing relationships (B) and (D). When we recalculate the probability of future loan engagement between the borrower and bank, the resulting change reflects the elimination of both the borrowing manager-lending bank relationship (i.e., relationship (B)) and the individual-pair relationship (i.e., relationship (D)).

We rerun the analysis a final time to explore what happens when the loan officer leaves the bank. In this scenario, because relationships (C) and (D) are severed, *any*

[14] As in to Panel A of Table 3, we cannot control for borrowing manager-loan officer fixed effect in tandem with loan officer fixed effect (Specification C) or with loan officer-borrowing firm fixed effect (Specification D) because they are highly correlated and one would subsume the other.

[15] In Panel B of Table 5, we also provide a robustness test where we control for either/both bank and firm fixed effects.

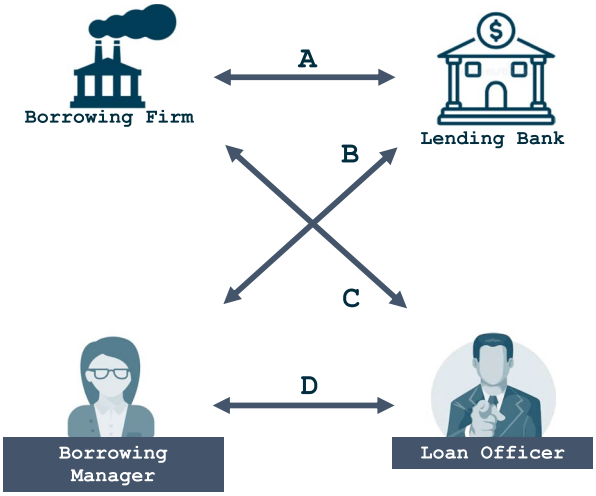

Fig. 1 Lending relationships. This figure illustrates the different types of lending relationships. Relationship A represents the institutional-pair lending relationship between a borrowing firm and a lending bank. Relationship B shows the individual-institutional lending relationship between a firm's borrowing manager and a lending bank. Relationship C depicts the individual-institutional lending relationship between a loan officer and a borrowing firm. Finally, Relationship D represents the individual-pair lending relationship between a borrowing manager and a loan officer

reduction in the probability of future loan engagement can be directly traced to that occurrence. To deduce the effect of the individual-pair relationship, we compare the probability changes reflected in all three analyses, where the sole relationship broken is the individual-pair relationship. If the change in probability of future lending is similar across all three specifications, we can deduce that the effect is driven by the common denominator: the absence of the individual pair (i.e., relationship (D)).

To test whether the individual-pair relationship is a main determinant of future loan probability, we create a subsample of loans using each entity's previous loan as the benchmark. Then, following Herpfer (2021), we look at the loan agreements to identify the last loans transacted by either the borrowing manager or loan officer and use this date to mark that person's departure from his or her position. We use this smaller sample to test whether the likelihood of future loan engagement is affected when an individual in an established relationship is no longer associated with the institution.

Table 4 displays the results of this analysis. Columns (1) through (3) report the probability of future loan engagement according to three scenarios: both individuals leave (Column 1), only the borrowing manager leaves (Column 2), or only the loan officer leaves (Column 3). In all specifications, we find that the borrower's propensity to subsequently borrow from the same lender is significantly lower. Specifically, when both the borrowing manager and loan officer leave, the odds ratio of future engagement is reduced by 69.6 percent. When the borrowing manager departs but the loan officer remains, the odds ratio is reduced by 73.8 percent. Lastly, when the loan officer leaves, the odds ratio is reduced by 67.4 percent. The similarity in outcomes suggests that the individual-pair relationship is the primary driver in the

Table 4 The effect of relationship rupture on subsequent loan transactions

Dependent variable:	(1) *Borrow from the Same Bank*	(2)	(3)
Both Left	-1.192**		
	(-2.49)		
Only Borrowing Manager Left		-1.341***	
		(-3.64)	
Only Loan Officer Left			-1.121***
			(-3.33)
Firm Size	0.131	0.193*	0.201
	(1.10)	(1.74)	(1.64)
Leverage	-0.783	-1.143	-1.717*
	(-0.76)	(-1.21)	(-1.71)
Profitability	0.811	-0.173	-0.169
	(0.34)	(-0.08)	(-0.07)
Tangibility	-1.234	-0.730	-0.398
	(-1.21)	(-0.81)	(-0.45)
MTB	0.058	0.070	0.096
	(0.91)	(1.03)	(1.11)
Interest Coverage	0.008	0.011	0.012*
	(1.26)	(1.58)	(1.71)
Current Ratio	0.129	0.050	0.026
	(0.74)	(0.34)	(0.18)
Non-Investment Grade	0.166	0.484	0.647
	(0.41)	(1.33)	(1.57)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Pseudo R-squared	0.204	0.209	0.201
Observations	345	368	378

This table reports logit regression results for the effect of individual employee departure on the likelihood of a firm's future same-bank borrowing. Our dependent variable, *Borrow from the Same Bank*, is an indicator variable equal to one if the loan is secured from the same bank as the previous loan and zero otherwise (DealScan). *Both Left* is an indicator variable equal to one if both the borrowing manager and the loan officer left their respective institutions and zero if both are still employed by them. *Only Borrowing Manager Left* is an indicator variable equal to one if only the borrowing manager departed and zero if both are still working for their respective companies. *Only Loan Officer Left* is an indicator variable equal to one if only the loan officer left the company and zero if both are still working for their respective companies. All other variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification) and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

decreased likelihood of future engagement. The results of these two additional tests support the notion that individual-pair relationships have incremental explanatory power over other lending relationships in debt contracting.

In our second test, we isolate the effect of individual-level relationship ruptures on loan spreads. To do so, we need to limit our analysis to parties who have transacted on at least two loans and then examine the effect of the individual-level relationship rupture on the spread of the third loan. However, this additional restriction

results in a small sample size. Therefore our current design tests whether the second loan between the borrower and lender occurs rather than focusing on loan spreads. Nevertheless, Internet Appendix Table IA5 shows our comparison of loan spread differences between the third and second loan interaction where the borrowing manager leaves but other parties (i.e., the loan officer, bank, and firm) remain (25 cases) with cases where all parties remain (54 cases). We find a significant increase in loan spread of 44.8 bps when the borrowing manager departs, compared to a decrease of 0.8 bps when that person remains. The difference of 45.6 bps is significant at the 10% level (one-tail test). The mean loan spread is also significantly higher at 51.3 bps in the third loan if the borrowing manager leaves (significant at the 10% level and one-tail test). There are several caveats to this test. First, the results are marginally significant, likely due to the small sample size. Second, we cannot control for time-varying factors in a univariate test. Third, we cannot isolate whether the observed effect is driven by the individual-pair relationship rupture or the severance of the borrowing manager-lending bank relationship.

Given that we cannot simultaneously control for all levels of lending relationships alongside *Individual-Pair Relationship Lending*, due to their collinearity as shown in Table 3, in the remainder of the paper, we only control for *Institutional-Pair Relationship Lending*, which is the most established lending relationship represented in the literature (Berger and Udell 1995; Boot and Thakor 2000; Duqi et al. 2018; Elyasiani and Goldberg 2004; Kysucky and Norden 2015; Petersen and Rajan 1994).

4.3 The impact of individual-pair relationship on loan spread with additional controls

Research documents how different relational dimensions affect loan contracting. Engelberg et al. (2012) show that affiliations through shared college or work experience reduce the cost of debt by 28 bps. Additionally, Fisman et al. (2017) find that cultural proximity of borrowers and lenders increases credit amount. In contrast, Campbell et al. (2019) document deteriorated loan quality when both borrower and lender are male.

To alleviate concern that the effects we document are attributable to the above individual-pair relationship types, we re-estimate regression (1) and add new control variables. Following Engelberg et al. (2012), we first consider how shared college affiliation or work experience may affect our results. In Column (1) Panel A of Table 5, we add the variable *Same College*, which is an indicator variable equal to one if the borrowing manager and loan officer attended the same undergraduate institution. Similarly, in Column (2), we add the variable *Borrowing Manager Worked in Financial Industry*, which is an indicator variable equal to one if the borrowing manager has previously worked in the banking industry, that is, the same industry as the loan officer.[16]

[16] The literature defines joint employment as both borrowing manager and loan officer having worked for the same company. But we did not find enough observations reflecting such an overlap on LinkedIn to generate statistical analysis. Therefore our joint employment requirement looks at whether both individuals worked in the banking industry rather than for the same company.

Table 5 The impact of individual-pair relationship on loan spread with additional controls

Panel A: Robustness tests controlling for other individual-pair-level relationships

	(1)	(2)	(3)	(4)	(5)
	Loan Spread	*Loan Spread*	*Loan Spread*	*Loan Spread*	*Loan Spread*
Individual-Pair Relationship Lending	-17.288* (-1.77)	-13.411** (-2.49)	-9.704** (-2.49)	-11.760*** (-3.11)	-11.467*** (-2.79)
Institutional-Pair Relationship Lending	-5.43 (-0.87)	-9.220** (-2.39)	-3.963 (-1.39)	-5.094* (-1.90)	-6.909** (-2.27)
Same College	13.135 (0.77)				
Borrowing Manager Worked in Financial Industry		1.414 (0.21)			
LnGeoDistance			4.173*** (3.69)		
Same Race				23.493 (1.22)	
Same Gender					1.780 (0.52)
Maturity	8.203 (1.26)	-15.198** (-2.39)	-13.322*** (-3.41)	-17.816*** (-4.58)	-17.737*** (-3.95)
Loan Size	-12.136** (-2.03)	-11.135*** (-2.82)	-12.251*** (-4.55)	-8.797*** (-3.44)	-10.555*** (-3.77)
Collateral	47.087*** (7.27)	47.618*** (9.92)	50.552*** (13.84)	52.733*** (15.30)	52.925*** (13.75)
Term Loan	60.459*** (5.31)	69.630*** (8.81)	67.325*** (10.89)	71.931*** (12.24)	73.794*** (11.36)
Firm Size	-7.128 (-1.29)	-5.915* (-1.73)	-4.434* (-1.90)	-8.999*** (-3.93)	-6.714*** (-2.65)

Table 5 (continued)

Leverage	49.994**	84.604***	90.734***	83.787***	90.151***
	(2.12)	(4.74)	(7.13)	(6.95)	(6.87)
Profitability	-215.948***	-217.367***	-213.531***	-244.862***	-232.228***
	(-4.40)	(-5.35)	(-9.94)	(-9.85)	(-8.04)
Tangibility	-36.102*	-12.675	-7.243	-5.870	-8.874
	(-1.81)	(-0.76)	(-0.69)	(-0.51)	(-0.75)
MTB	0.344	1.213*	0.841	0.579	0.501
	(0.40)	(1.73)	(1.56)	(1.33)	(1.04)
Interest Coverage	-0.001	-0.001	0.001	0.001	0.001
	(-0.28)	(-0.79)	(0.59)	(0.57)	(0.72)
Current Ratio	-7.187**	-5.863**	-5.956***	-3.225**	-5.774***
	(-2.26)	(-2.58)	(-3.80)	(-2.37)	(-3.52)
Non-Investment Grade	29.848***	45.139***	42.848***	40.092***	43.767***
	(3.48)	(7.15)	(9.38)	(9.27)	(8.95)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Purpose FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.536	0.507	0.525	0.524	0.513
Observations	748	2,027	3,320	3,883	3,135

Panel B: Other robustness tests controlling for additional borrowing manager characteristics, loan characteristics and bank and firm fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Loan Spread	*Loan Spread*	*Loan Spread*	*Loan Spread*	*Loan Spread*	*Loan Spread*
Individual-Pair Relationship Lending	-14.916***	-10.330***	-12.867***	-6.263*	-8.840**	-7.290*
	(-2.93)	(-2.67)	(-3.36)	(-1.77)	(-2.10)	(-1.87)
Institutional Relationship Lending	-8.969**	-5.638**	-8.591***	-1.758	-3.215	-3.227
	(-2.32)	(-2.07)	(-2.91)	(-0.66)	(-0.96)	(-0.95)
Chief Title	-6.760					
	(-1.39)					

Table 5 (continued)

Board Member		-0.177 (-0.06)				
Loan Importance			-20.850*** (-3.09)			
Maturity	-15.073** (-2.36)	-15.729*** (-3.72)	-17.234*** (-4.42)	-13.636*** (-3.88)	-7.860* (-1.89)	-8.672** (-2.23)
Loan Size	-10.374*** (-2.63)	-7.480*** (-2.86)	-7.479*** (-2.93)	-7.269*** (-2.93)	-5.292 (-1.44)	-3.213 (-0.88)
Collateral	47.279*** (9.94)	49.557*** (13.70)	52.029*** (14.95)	45.064*** (13.08)	32.446*** (5.33)	30.367*** (5.42)
Term Loan	69.546*** (8.64)	71.831*** (11.70)	71.652*** (12.21)	62.467*** (11.38)	64.184*** (8.16)	53.514*** (7.36)
Firm Size	-7.366** (-2.15)	-9.280*** (-4.01)	-10.882*** (-4.59)	-7.124*** (-3.32)	-10.363** (-2.02)	-15.577*** (-3.20)
Leverage	81.210*** (4.55)	87.383*** (6.82)	77.294*** (6.27)	95.355*** (8.36)	61.200*** (2.89)	78.304*** (4.05)
Profitability	-220.027*** (-5.41)	-244.294*** (-8.98)	-246.325*** (-9.96)	-161.209*** (-7.89)	-187.820*** (-5.03)	-160.556*** (-4.79)
Tangibility	-9.611 (-0.59)	-7.047 (-0.58)	-4.514 (-0.40)	-2.544 (-0.28)	-39.451 (-1.06)	-48.957 (-1.51)
MTB	1.185* (1.71)	0.651 (1.40)	0.645 (1.46)	0.164 (0.36)	0.582 (0.78)	0.214 (0.27)
Interest Coverage	-0.001 (-0.61)	0.001 (0.72)	0.001 (0.66)	-0.000 (-0.30)	0.004*** (3.56)	0.003*** (2.96)
Current Ratio	-7.070*** (-3.11)	-5.226*** (-3.52)	-3.030** (-2.39)	-1.492 (-1.24)	-5.516** (-2.48)	-5.665*** (-2.73)
Non-Investment Grade	45.729*** (7.29)	41.971*** (9.38)	40.118*** (9.26)	44.861*** (11.10)	45.584*** (5.93)	44.204*** (5.73)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 (continued)

Industry FE	Yes	Yes	Yes	Yes	No	No
Purpose FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	No	No	No	Yes	No	Yes
Firm FE	No	No	No	No	Yes	Yes
Adj. R-squared	0.509	0.525	0.526	0.575	0.623	0.662
Observations	2,014	3,468	3,883	3,768	2,850	2,732

This table reports the impact of individual-pair relationship lending controlling for other individual-pair-level relationships in the literature (Panel A) and controlling for additional borrowing manager characteristics, loan characteristics, and bank and firm fixed effects (Panel B)

Panel A reports the regression results of individual-pair relationship lending's effect on loan spread controlling for other individual-pair level relationships in the literature. Our dependent variable, *Loan Spread*, is the all-in-drawn loan spread over LIBOR. Column (1) examines the effect of individual-pair relationship controlling for *Same College*, which is an indicator variable equal to one if the borrowing manager and loan officer attended the same undergraduate institution and zero otherwise. In Column (2), we examine the effect of the individual-pair relationship controlling for *Borrowing Manager Worked in Financial Industry*, which is an indicator variable equal to one if the borrowing manager has worked in the banking industry, i.e., the same industry as the loan officer, and zero otherwise. Column (3) controls for *LnGeoDistance*, which is the natural logarithm of geographic distance between the lender and the borrower. Column (4) controls for *SameRace*, which is an indicator variable equal to one if the borrowing manager and the loan officer are of the same ethnicity and zero otherwise. Column (5) controls for *SameGender*, which is an indicator variable equal to one if the borrowing manager and loan officer are of the same gender and zero otherwise. All variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

Panel B reports the regression results of individual-pair relationship lending's effect on loan spread controlling for whether the borrowing manager has a chief title in Column (1), whether the borrowing manager also serves as a board member in Column (2), whether the loan amount is of relative importance to the firm in Column (3), bank fixed effects in Column (4), firm fixed effects in Column (5), and both bank and firm fixed effects in Column (6). Our dependent variable, *Loan Spread,* is the all-in-drawn loan spread over LIBOR. All variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

To obtain the data that inform our additional variables, we consult LinkedIn to identify the borrowing manager's and loan officer's education and work experience (Even-Tov and Ozel 2021).[17] Similarly, to estimate the effect of cultural proximity following Fisman et al. (2017), we control for *LnGeoDistance* in Column (3), which is the natural logarithm of geographic distance between the lender and the borrower. In Column (4), we control for *Same Race*, as defined by Even-Tov et al. (2022), which is an indicator variable equal to one if the borrowing manager and loan officer are of the same ethnicity and zero otherwise. Last, in light of the work of Campbell et al. (2019), Column (5) controls for *Same Gender*, which is an indicator variable equal to one if the borrowing manager and loan officer identify as the same gender and zero otherwise.

Our results across all these columns show that individual-pair lending relationships cultivated through repeated professional engagement are still economically meaningful. Given the insignificant coefficients of most of the other individual-pair variables, except for *LnGeoDistance*, and the lack of available data pertaining to some of them, the remainder of our analyses focus on the full sample.

Our study is also distinct from the research on top executives and lending banks. Whereas Khan et al. (2019) and Karolyi (2018) investigate the relationship between borrowing firms' top executives and lending banks, our paper looks specifically at the relationship between borrowing managers and loan officers. Even so, we confirm that our results are robust to controlling for whether the borrowing manager holds a chief title or serves as a board member and for whether the loan is important by comparing the loan amount to the total loan amount extended to the borrower in the previous five years. Our analyses in Columns (1) through (3) in Panel B of Table 5 show that our results are robust to adding these control variables. Last, in Columns (4) through (6), we show that our results are robust when adding bank fixed effects, firm fixed effects, and both bank and borrowing-firm fixed effects. Therefore our individual-pair relationship estimates are unaffected by unobservable time-invariant bank and borrower characteristics.

4.4 Determinant model of individual-pair relationship lending

Despite our efforts to control for time-invariant omitted correlated variables using fixed effects, there may still be some time-varying correlated factor that draws together the borrowing manager-loan officer pair and leads to a lower loan spread. To alleviate this concern, we run a determinant model to see which individual-pair or borrower characteristics are correlated with our individual-pair measure. The results of this analysis are reported in Table 6. As shown, we do not find that companies with individual-pair relationships differ in any way or that the individual pair has other shared experiences that increase the likelihood of their pairing. This is probably because the relationship is not self-selected by either the borrowing manager or loan; it is formed through working together, and the pairing appears to be random.

[17] We find shared college affiliation for about 19% of our sample (748 observations) and professional background alignment for just over half (2,027 observations).

Table 6 Determinant model of individual-pair relationship lending

	Individual-Pair Relationship Lending				
	(1)	(2)	(3)	(4)	(5)
Same College	0.062				
	(1.03)				
Borrower Manager Worked in Financial Industry		0.038			
		(1.40)			
LnGeoDistance			0.001		
			(0.34)		
SameRace				0.014	
				(0.19)	
SameGender					0.013
					(1.04)
Maturity	-0.004	-0.006	-0.019	-0.013	-0.020*
	(-0.17)	(-0.38)	(-1.62)	(-1.23)	(-1.73)
Loan Size	0.020	0.018	0.025***	0.020***	0.031***
	(1.09)	(1.60)	(2.99)	(2.63)	(3.83)
Collateral	-0.014	-0.041**	-0.021	-0.023*	-0.019
	(-0.54)	(-2.39)	(-1.58)	(-1.91)	(-1.35)
Term Loan	0.074*	0.048**	0.018	0.018	0.014
	(1.86)	(2.26)	(1.14)	(1.22)	(0.89)
Firm Size	-0.002	0.004	0.003	0.003	-0.001
	(-0.15)	(0.41)	(0.38)	(0.55)	(-0.10)
Leverage	0.126	0.080*	0.074**	0.082**	0.045
	(1.47)	(1.76)	(1.98)	(2.40)	(1.23)
Profitability	0.045	0.065	0.062	0.050	0.021
	(0.37)	(1.00)	(1.29)	(1.15)	(0.44)
Tangibility	0.035	0.018	-0.035	0.026	0.023
	(0.34)	(0.37)	(-1.07)	(0.76)	(0.67)
MTB	-0.002	-0.002	-0.000	-0.001	-0.001
	(-0.79)	(-1.49)	(-0.40)	(-1.54)	(-1.04)
Interest Coverage	0.000	-0.000	-0.000	0.000	-0.000
	(1.02)	(-1.12)	(-0.06)	(0.08)	(-0.19)
Current Ratio	-0.005	-0.006	0.000	0.000	0.000
	(-0.58)	(-0.96)	(0.06)	(0.02)	(0.07)
Non-Investment Grade	0.005	0.045*	0.024	0.014	0.014
	(0.11)	(1.85)	(1.25)	(0.81)	(0.68)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Purpose FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.017	0.034	0.034	0.031	0.033
Observations	748	2,027	3,320	3,883	3,135

This table reports the determinant model of *Individual-Pair Relationship Lending*. Our dependent variable, *Individual-Pair Relationship Lending*, is an indicator variable equal to one if a borrowing manager-loan officer pair previously engaged in a loan transaction before the current transaction and zero if it is their first transaction. Column (1) examines the effect of *Same College*, which is an indicator variable equal to one if the borrowing manager and loan officer attended the same undergraduate institution and zero otherwise. In Column (2), we examine the effect of *Borrowing Manager Worked in Financial*

Table 6 (continued)

Industry, which is an indicator variable equal to one if the borrowing manager previously worked in the banking industry, i.e., the same industry as the loan officer, and zero otherwise. Column (3) examines the effect of *LnGeoDistance*, which is the natural logarithm of geographic distance between the lender and the borrower. Column (4) examines the effect of *SameRace*, which is an indicator variable equal to one if the borrowing manager and the loan officer are of the same ethnicity and zero otherwise. Column (5) examines the effect of *SameGender*, which is an indicator variable equal to one if the borrowing manager and the loan officer are of the same gender and zero otherwise. All columns include firm and loan characteristics defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

4.5 Cross-sectional effects of individual-pair relationship lending on loan spread

Studies suggest that relationship lending is most valuable for accumulating soft information from borrowers (Bushman et al. 2021; Campbell et al. 2019; Liberti and Petersen 2019). To confirm that soft information acquisition is the probable mechanism linking individual-pair relationship lending and cost of debt (hypothesis *H1a*), we follow prior studies and create four measures to capture environments where this information is more valuable (Agarwal and Ben-David 2018; Bushman et al. 2021; Liberti and Petersen 2019).

Our first two measures focus on the borrower's information environment, which affects the lender's reliance on soft information (Liberti and Petersen 2019). The first, *Analyst Following*, measures a firm's equity analyst coverage.[18] Greater analyst following likely yields more publicly available information, for example, earnings forecasts. Analysts are also more inclined to follow larger firms, which have been found to have higher-quality financial reporting (e.g., Barth et al. 2001; O'Brien and Bhushan 1990). Therefore we expect that lenders at firms with lower analyst followings will rely more on soft information. The second measure, *Accounting Quality*, assesses a firm's abnormal accrual following Sunder et al. (2008).[19] If a borrower has low accounting quality, the lender will need to rely on additional information apart from the financial statements.

Table 7 Panel A reports the results of re-estimating regression (1) and partitioning our sample to below and above the median *Analyst Following* variable (Columns 1 and 2, respectively) or to below and above the median *Accounting Quality* variable (Columns 3 and 4, respectively). The coefficient on *Individual-Pair Relationship Lending* is significantly negative and economically large for low analyst following, as reflected by the -25.8 bps lower loan spread (Column 1). In comparison, the

[18] Optimally, debt analyst following would be most relevant in this context, but these data are hard to obtain and parse from the bond analyst reports issued by certain data vendors. However, given that both the studies on bond analysts (De Franco et al. 2009; Johnston et al. 2009) and equity analysts (Barth et al. 2001; O'Brien and Bhushan 1990) separately find that firms with higher analyst following are usually larger, we can assume that bond and equity analyst following are highly correlated.

[19] Specifically, we estimate the abnormal accruals based on three metrics: (1) Dechow and Dichev (2002), (2) Teoh, Wong, and Welch (1998), and (3) Dechow et al. (1995). We then take the first principal component from these three types of unsigned abnormal accruals multiplied by -1 so that the measure is increasing in accounting quality. See Appendix B of Sunder et al. (2008) for a detailed description of how this accounting quality measure is calculated.

Table 7 The cross-sectional effects of individual-pair relationship lending

Panel A: The cross-sectional tests based on borrowing firm characteristics

	Analyst Following		*Accounting Quality*	
	(1)	(2)	(3)	(4)
	Low	High	Low	High
Individual-Pair Relationship Lending	-25.800***	-2.336	-14.835**	-5.433
	(-2.98)	(-0.52)	(-2.23)	(-0.90)
Institutional Relationship Lending	-7.296	-2.956	-6.710	-4.341
	(-1.47)	(-0.92)	(-1.55)	(-1.09)
Maturity	-30.192***	-8.345***	-18.896***	-16.153***
	(-5.63)	(-2.81)	(-4.37)	(-4.18)
Loan Size	-4.740	-8.229***	-7.371**	-12.425***
	(-1.39)	(-3.45)	(-2.43)	(-4.36)
Collateral	52.425***	49.019***	48.178***	53.910***
	(9.47)	(13.01)	(9.77)	(11.63)
Term Loan	80.415***	62.415***	82.929***	58.644***
	(13.31)	(13.48)	(14.57)	(10.99)
Firm Size	-14.138***	0.727	-11.644***	-4.380*
	(-4.37)	(0.33)	(-4.47)	(-1.73)
Leverage	79.275***	89.667***	87.620***	85.038***
	(5.53)	(7.62)	(6.52)	(6.42)
Profitability	-272.730***	-156.918***	-260.454***	-204.513***
	(-11.08)	(-7.98)	(-12.83)	(-7.80)
Tangibility	-5.363	5.509	-5.074	-7.740
	(-0.40)	(0.52)	(-0.40)	(-0.61)
MTB	0.419	0.726**	0.687	0.380
	(0.71)	(2.46)	(1.55)	(0.95)
Interest Coverage	-0.008	0.001	-0.003	0.000
	(-1.01)	(0.40)	(-0.45)	(0.11)
Current Ratio	-2.815**	-1.588	-5.721***	-3.792**
	(-2.07)	(-1.13)	(-3.60)	(-2.17)
Non-Investment	48.031***	47.151***	39.433***	42.196***
Grade	(4.71)	(10.72)	(5.42)	(7.42)
Difference between two groups (p-value)	0.003		0.187	
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Purpose FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.452	0.567	0.512	0.525
Observations	1,851	2,032	1,897	1,907

Panel B: The cross-sectional tests on lending bank and loan officer characteristics

	Bank Ranking		Loan officer Ranking	
	(1)	(2)	(3)	(4)
	Non-Top 10	Top 10	Non-Top 10	Top 10
Individual-Pair Relationship Lending	-23.710**	-4.790	-15.155***	2.436
	(-2.37)	(-1.05)	(-3.01)	(0.29)

Table 7 (continued)

Institutional Relationship Lending	0.758 (0.13)	-6.178** (-1.98)	-4.781 (-1.53)	2.042 (0.27)
Maturity	-22.839*** (-4.00)	-10.642*** (-3.42)	-19.163*** (-6.28)	2.910 (0.41)
Loan Size	-9.616** (-2.33)	-8.794*** (-3.81)	-8.720*** (-4.00)	-9.812 (-1.61)
Collateral	59.656*** (8.89)	48.287*** (13.40)	51.902*** (14.60)	45.589*** (4.93)
Term Loan	83.490*** (11.34)	57.452*** (13.13)	74.223*** (18.22)	43.066*** (3.82)
Firm Size	-8.502** (-2.37)	-4.962** (-2.47)	-9.843*** (-5.13)	2.256 (0.44)
Leverage	82.041*** (4.58)	91.719*** (8.86)	84.738*** (8.59)	92.854*** (3.33)
Profitability	-224.117*** (-7.59)	-197.802*** (-10.46)	-240.520*** (-14.53)	-270.025*** (-5.08)
Tangibility	-1.010 (-0.06)	-10.680 (-1.12)	-4.092 (-0.45)	-34.593 (-1.44)
MTB	0.092 (0.14)	0.694** (2.26)	0.325 (1.00)	1.974*** (3.41)
Interest Coverage	0.002 (0.67)	-0.005 (-0.95)	0.001 (0.29)	0.056 (0.92)
Current Ratio	-5.522*** (-2.71)	-3.794*** (-2.73)	-3.361*** (-3.36)	3.405 (0.70)
Non-Investment Grade	52.909*** (5.33)	40.664*** (8.82)	41.574*** (8.51)	34.705*** (3.67)
Difference between two groups (p-value)	0.042		0.029	
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Purpose FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.494	0.556	0.513	0.666
Observations	1,195	2,479	3,532	351

This table reports cross-sectional effects of individual-pair relationship lending based on borrowing firm characteristics (Panel A) and lending bank and loan officer characteristics (Panel B)

Panel A reports the regression results of individual-pair relationship lending's effect on loan spread based on different borrowing firms' characteristics. Our dependent variable, *Loan Spread*, is the all-in-drawn loan spread over LIBOR. Columns (1) and (2) examine the effect based on whether the borrower's analyst following is below or above the sample median. Columns (3) and (4) examine the effect based on whether the accounting quality of the borrower is above or below the sample median. All variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

Panel B reports the regression results of individual-pair relationship lending on loan spread based on different lending bank and loan officer characteristics. Our dependent variable, *Loan Spread*, is the all-in-drawn loan spread over LIBOR. Columns (1) and (2) examine the effect based on whether a bank's total number of loan packages during the sample period is among the top 10 banks. Columns (3) and (4) examine the effect based on whether the loan officer's total number of loan packages during the sample period is among the top 10 loan officers. All variables are defined in Appendix A. We include year, industry (using Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

coefficient is insignificantly different from zero for high *Analyst Following* (Column 2). Moreover, the difference between the two is significantly different from zero.

Moving to *Accounting Quality*, we find that the coefficient on *Individual-Pair Relationship Lending* is significantly negative and economically large for low accounting quality, as reflected by a -14.8 in loan spread (Column 3). In comparison, the coefficient is insignificantly different from zero for high *Accounting Quality* (Column 4). However, while the coefficient in Column (3) is statistically different from zero and the coefficient in Column (4) is not, the difference between the two coefficients is not statistically significant, likely due to the high volatility in Column (4). These results show substantive loan spread variation within the individual pairs according to the borrower's availability and the reliability of hard information. Our evidence indicates that the individual-pair relationship benefits lenders most when they rely more on soft information than hard information.

Next we examine how the loan volume of the lending institution and loan officer influences the effect of individual-pair lending relationships on loan spread. Due to their volume of lending activity and competitive market positioning (Presbitero and Zazzaro 2011), larger institutions that participate in more loan syndicates are likely to adopt a transactional approach and rely more on hard information than soft information (Berger et al. 2005; Bushman et al. 2021). These types of lenders theoretically value the relationship-based loan *less* than smaller institutions. Accordingly, we expect this group to value the individual-pair relationship *less* than smaller players in the market.

To test our predictions, in the third measure, we follow prior studies and use the bank's top 10 ranking to capture the lender's prominence and experience in the syndicated loan market (e.g., Murfin and Petersen 2016). Specifically, *Non-Top10 Bank* is an indicator variable equal to one if the bank's total number of loan packages during the sample period is fewer than those of the top 10 banks. Table 7 Panel B reports the results of re-estimating regression (1) based on *Non-Top10 Bank* indicator in Columns (1) and (2).[20] The coefficient on *Individual-Pair Relationship Lending* for the *Non-Top10 Bank* subsample is significantly negative and economically large, as reflected by the -23.7 bps lower loan spread (Column 1). In comparison, the coefficient is insignificantly different from zero for the top 10 banks (Column 2). Moreover, the difference between the two is significantly different from zero. The evidence from this analysis suggests that, relative to larger volume lenders, smaller volume lenders with individual-pair lending relationships provide a significantly lower loan spread over our sample period. This finding indicates that individual-pair relationships help smaller banks accumulate more soft information. It is consistent with the findings of Bushman et al. (2021) and Berger et al. (2005), who show that, in loan transactions, large banks rely more on hard information and small banks more on soft information.

Next we test whether the lending relationship confers greater value to less active loan officers. Similar to smaller lenders, officers who engage in fewer transactions are more likely to rely on soft information (Agarwal and Ben-David 2018). To test

[20] The sample size of this analysis is slightly smaller than that in Panel A of Table 3, either because several bank names in loan contracts cannot be matched with bank names in DealScan or some banks cannot be merged with Compustat to calculate ranks at the bank holding company level.

our supposition, for our fourth measure, we follow the same logic as employed in our bank cross-section test and create an indicator variable to capture the loan officer's activity level. Specifically, *Non-Top10 Loan Officer* is an indicator variable equal to one if the officer's total number of loan packages during the sample period is not among the top 10 loan officers. In Columns (3) and (4), we report the results of re-estimating regression (1) by partitioning the sample by *Non-Top10 Loan Officer*. The coefficient on *Individual-Pair Relationship Lending* for the *Non-Top10 Loan Officer* subsample is significantly negative and economically large, as reflected by a -15.2 bps reduction in loan spread (Column 3). In comparison, the coefficient is insignificantly different from zero for the top 10 loan officers (Column 4). Moreover, the difference between the two is significantly different from zero. This analysis shows that less active loan officers in an individual-pair lending relationship offer a significant reduction in loan spread. Our evidence suggests that lower-volume loan officers may be less equipped to screen and monitor hard-information-based loans, which may translate to greater reliance on individual-pair relationships to mitigate information asymmetry and accumulate soft information.

4.6 Loan performance

We have presented ample evidence that the soft information mechanism is the first channel through which the individual-pair relationship is associated with loan spread. After loan officers accumulate soft information, they may employ it to better screen and monitor the loan, or they may engage in suboptimal lending with lower interest rates and deteriorated loan quality. In this subsection, we examine hypothesis *H1b* and focus on a borrower's future downgrades as a measure of loan quality to distinguish between two alternative mechanisms. On the one hand, lending relationships may lead to lower loan spreads because loan officers learn more and screen and monitor better, in which case we expect decreased probability of a future downgrade. On the other hand, if lending relationships induce cronyism, where loan officers confer unwarranted advantages to borrowing managers based solely on the relationship, we expect increased likelihood of a future downgrade. To discern which is more likely, in Table 8, we re-estimate regression (1) by replacing our dependent variable, *Loan Spread*, with *Downgrade*. We define *Downgrade* as an indicator variable equal to one if the borrowing firm is downgraded between the loan initiation date and maturity.

Table 8 shows that the coefficient on *Individual-Pair Relationship Lending* is significantly negative (at the 5% level), at -0.322. This means that the odds of a borrowing firm downgrade are almost 28% lower in individual-pair relationship loans, relative to those without this relationship. Consistent with Hypothesis *H1b*, our evidence suggests that the presence of individual-pair lending relationships decreases a borrower's chance of future downgrade and amplifies the lender's screening and monitoring ability.[21]

[21] In Internet Appendix Table IA6, we also examine loan defaults as an additional measure of loan performance (Bushman et al. 2021; Gao et al. 2020). Due to the small number of defaults in our sample (74 defaults, representing 1.91% of our sample), we do not find significant results using default as an indicator outcome variable.

Table 8 The impact of individual-pair relationship lending on loan performance

	(1) *Downgrade*
Individual-Pair Relationship Lending	-0.322** (-2.26)
Institutional-Pair Relationship Lending	-0.109 (-1.11)
Maturity	0.930*** (8.39)
Loan Size	0.157* (1.96)
Collateral	0.305** (2.40)
Term Loan	0.016 (0.12)
Loan Spread	-0.010 (-0.09)
Firm Size	0.535*** (7.26)
Leverage	1.856*** (5.02)
Profitability	0.966 (1.34)
Tangibility	0.602* (1.72)
MTB	0.006 (0.64)
Interest Coverage	-0.001* (-1.73)
Current Ratio	0.062 (1.30)
Year FE	Yes
Industry FE	Yes
Purpose FE	Yes
Pseudo R-squared	0.187
Observations	3,883

This table reports the regression results of individual-pair relationship lending on loan performance measured by *Downgrade* (an indicator for whether a firm is downgraded between the loan initiation date and maturity date). All other variables are defined in Appendix A. We include year, industry (using the Fama–French 48 industries classification), and loan purpose fixed effects and cluster standard errors at the firm level. ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively

5 Conclusion

Relationship lending has often been regarded as a mechanism to reduce information asymmetry and accumulate soft information in debt contracting. While studies have explored many different lending relationship types, we believe that ours is the first to examine individual-pair lending relationships developed through repeated professional interaction. The literature has focused on higher-level relationships and has overlooked the bond cultivated between the individuals most engaged in the loan process, who are key to the gathering of soft information. Through our novel dataset consisting of a hand-collected sample of loan contracts, we show that the individual-pair lending relationship is both economically significant and distinct from institutional-pair and individual-institutional lending relationships.

We also demonstrate that the individual-pair relationship we study differs from those explored elsewhere. While bonds established through alumni affiliation, social networks, industry experience, cultural proximity, or gender certainly affect corporate behavior and investment decisions, our study provides unique insights into the value of the personal relationship emergent from sustained professional engagement between loan officer and borrowing manager. In addition, we show that individual-pair relationships and the soft information accrued through them matter more when borrowers, banks, and loan officers rely less on hard information. This professional relationship also helps lenders better screen and monitor loans, fostering better loan quality overall.

Last, the unique capacity of individual-pair relationships to aid in soft information procurement (e.g., working style and personality traits) is particularly relevant in the context of financial disintermediation, where financial technology may provide a direct match between lenders and borrowers. Specifically, because soft information is unlikely to be quantified and communicated via this technology, surveying the value of individual-pair relationships contributes to discussion regarding the banking industry's future and the informational losses that accrue with financial disintermediation. Although we focus on the loan setting, our findings are likely applicable to other corporate sectors and thus suggest that the cultivation and impact of individual relationships in additional environments may present fruitful avenues for future inquiry.

Appendix A Variable Definitions

Variable Name	Variable Definition	Source
Relationship Lending Measures		
Individual-Pair Relationship Lending	An indicator variable equal to one if a borrowing manager-loan officer pair has previously engaged in a loan transaction before the current transaction and zero if it is their first transaction	Raw loan contracts
Institutional-Pair Relationship Lending	An indicator variable equal to one if a borrowing firm-lending bank pair has engaged in a loan transaction within five years of the current transaction and zero if it is their first transaction	DealScan
CEO-Bank Relationship Lending	An indicator variable equal to one if the firm CEO-lending bank pair has engaged in a loan transaction before the current transaction and zero if it is their first transaction	Execucomp and Dealscan
Borrowing Manager-Bank Relationship Lending	An indicator variable equal to one if the borrowing manager-lending bank pair has engaged in a loan transaction prior to the current transaction and zero if it is their first transaction	Raw loan contracts and Dealscan
Loan Officer-Borrowing Firm Relationship Lending	An indicator variable equal to one if the loan officer-borrowing firm pair has engaged in a loan transaction before the current transaction and zero if it is their first transaction	Raw loan contracts and Dealscan
Major Loan and Borrower Characteristics		
Loan Spread	All-in-drawn loan spread over LIBOR	DealScan
Maturity	The natural logarithm of loan maturity (in months). Unlogged value is reported in the descriptive statistics	DealScan
Loan Size	The natural logarithm of the loan amount. We use the largest facility amount per loan. Unlogged value is reported in the descriptive statistics	DealScan
Collateral	An indicator variable equal to one if the loan has collateral and zero otherwise	DealScan
Term Loan	An indicator variable equal to one if the loan type is term loan and zero otherwise	DealScan
Firm Size	The natural logarithm of the origin firm's total assets. Unlogged value is reported in the descriptive statistics	Compustat
Leverage	(Long-term debt + current debt)/total assets	Compustat
Profitability	Earnings before interest, taxes, and depreciation/total assets	Compustat
Tangibility	Property, plant, and equipment/total assets	Compustat
MTB	(Stock price*shares outstanding)/(stockholders' equity – preferred stock + deferred taxes and investment tax credit)	Compustat
Interest Coverage	EBIT/interest expense	Compustat
Current Ratio	Current asset/current liability	Compustat

Variable Name	Variable Definition	Source
Non-Investment Grade	An indicator variable equal to one if a firm's S&P rating is below BBB and zero otherwise	Compustat
Other Variables		
Same College	An indicator variable equal to one if the borrowing manager and loan officer went to the same college and zero otherwise	LinkedIn
Borrowing Manager Worked in Financial Industry	An indicator variable equal to one if the borrowing manager worked in the financial industry and zero otherwise	LinkedIn
LnGeoDistance	The natural logarithm of geographic distance (in miles) between the lender and the borrower	Compustat
Same Race	An indicator variable equal to one if the borrowing manager and the loan officer are of the same ethnicity and zero otherwise	Raw loan contracts
Same Gender	An indicator variable equal to one if the borrowing manager and the loan officer are of the same gender and zero otherwise	Raw loan contracts
Chief Title	An indicator variable equal to one if a borrowing manager has a chief title and zero otherwise	Raw loan contracts
Board Member	An indicator variable equal to one if a borrowing manager also serves as a board member, and zero otherwise	BoardEx
Loan Importance	Loan amount of the current loan/firm's total loan amount in prior five years	Dealscan
Analyst Following	The number of analysts covering the firm	I/B/E/S
Accounting Quality	Following Sunder et al. (2008), we estimate abnormal accruals based on three metrics: (1) a regression relating total accruals to firms' past, current, and future cash flows based on Dechow and Dichev (2002); (2) the absolute abnormal current accruals based on Teoh, Wong, and Welch (1998); and (3) the modified Jones model derived from Dechow, Sloan, and Sweeny (1995) based on Jones (1991). We then take the first principal component from three types of unsigned abnormal accruals multiplied by -1 so that the measure is increasing in accounting quality. Specifically, we calculate the absolute value of abnormal accruals on the firm level using the cross-section of all firms for each of the 48 Fama and French industry groups for each year. We require at least eight observations in each Fama and French 48 industry-year regression	Compustat
Non-Top10 Bank	An indicator variable equal to one if the bank's total number of loan packages during the sample period is not among the top 10 banks and zero otherwise	DealScan
Non-Top 10 Loan Officer	An indicator variable equal to one if the loan officer's total number of loan packages during the sample period is not among the top 10 loan officers and zero otherwise	Raw loan contracts and DealScan
Downgrade	An indicator variable equal to one if a firm is downgraded between the loan initiation date and maturity date and zero otherwise	S&P ratings

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